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SCIENCE

FRIDAY, NOVEMBER 30, 1888.

THE UNITED STATES CONSUL at Manila, Philippine Islands, has written to the State Department to announce that the disease that raged during the summer at Taytay, about eight miles north-west of Manila, and which subsequently spread to the latter-named city, has subsided, and that there is now little apprehension of an epidemic. This disease was officially declared to be Asiatic cholera. It now appears, that, just before the sickness broke out at Taytay, a large consignment of rice, which had been stored in a damp place and soured, was sold among the native shops of the village by some speculative Chinamen, who had purchased it at very low rates owing to its damaged condition. As far as is known, all who ate this rice were attacked with what was supposed to be cholera. The symptoms attending the first cases were undoubtedly those of ordinary cholera-morbus, but subsequent cases showed the most prominent features of Asiatic cholera. The theory that disease is produced or aggravated by the imagination finds some support in this case. The masses, native and European, seem to live in mortal terror of cholera, which has made fearful ravages throughout these islands; and the first indication of an outbreak fills every one with fear. After the disease at Taytay was pronounced genuine cholera, the daily death-rate increased very rapidly; and, although the village was rapidly quarantined, the sickness spread to Manila, and within a week between sixty and seventy deaths occurred. As the death-rate failed to show the usual rapid increase, the hope gained ground that the physicians might be mistaken, and that what was supposed to be genuine cholera might be an unusually aggravated form of cholera-morbus. At all events, the number of deaths began to decrease a few days later, and the fear that the terrible plague of 1882 was to be repeated has now quite subsided. The total number of deaths in Manila since the disease appeared there late in August is 186.

THE AMERICAN PUBLIC HEALTH ASSOCIATION.

THE Sixteenth Annual Meeting of the American Public Health Association was held at Milwaukee, Wis., Nov. 20, 21, 22, and 23. More than one hundred and fifty members were present, representing almost every State in the Union and the provinces of Canada. The opening address was given by Dr. C. N. Hewitt of Minnesota, the president of the association. An abstract of this will be published in a future number of *Science*. Following the address, a large number of papers were read during the session of the association, to the most important of which we shall refer.

Benjamin Lee, M.D., secretary of the State Board of Health of Pennsylvania, read a paper on 'Memoranda of Visits to the Quarantine Stations of the Atlantic Coast, made during the Summer of 1888.' In this paper Dr. Lee criticises in most unfavorable terms the quarantine stations of New York, Philadelphia, Baltimore, Norfolk, and Wilmington. He sums up the defects of the entire system in the following language: "1. Want of uniformity in quarantine regulations, placing one port at a disadvantage [either commercially or sanitively] as compared with another; 2. Conflict of authority, owing to the methods of appointing officials; 3. Entire lack of appreciation on the part of local legislatures, whether state or municipal, of the importance of the expenditure of considerable amounts of money in order to render quarantines at once efficient and inoppressive; 4. Tendency on part of local civic and sanitary authorities to limit their responsibility to the protection of their own city, reckless of the consequences which may ensue to inland communities if they permit infection, which circumstances render harmless to themselves, to pass unchallenged to the latter."

Dr. Crosby Gray of Pittsburgh, Penn., read a paper on the contamination of the water-supply of a portion of that city by surface drainage. The death-rate in this portion of the city (the south side) was higher than that of the rest of the city, and typhoid-fever had been very prevalent there. An investigation proved that the water-supply drawn from the Monongahela was being seriously, steadily, and increasingly polluted by sewage, factory-refuse, and by bumboat nuisances; and that the epidemic in question had been caused by the sudden downwash, through rainwater surface drainage, of typhoid excrements from certain gulleys far above the intake, the disease having for some time been endemic in those localities in a small way.

In the course of his remarks he called attention to the following facts: "The cash value of a human life to a community has often been computed, and it is a moderate estimate of the average value of the 260 lives lost on the south side, over and above its just percentage of the current death-rate in Pittsburgh, at \$1,275 each, or \$331,500 together. To this should be added the burial-expenses at \$50, or \$13,000 in all. But, as for every death there are many ill who recover, it would be a juster estimate to capitalize the sick at ten times that of the death-rate. That would mean 2,600 people ill. The average time these persons would be compelled to remain unemployed would be, say, 30 days. This would give us 78,000 days' work lost. From this deduct 15 per cent for those below the productive period of life, which would leave 66,300 days lost. Averaging the value of a day's work at \$1.25, the total loss in productivity would be \$82,875. Add a quarter to this sum, on the basis of but 31 cents per day, for otherwise productive time devoted to nursing, etc., that amounts to \$20,718 more; to which should be added certainly not less than \$2 per case for medicine, i.e., \$5,200 more. And finally there should not be forgotten the legitimate profit (say, one-third a day's wages) on its putative product, to wit, all of \$27,625 more. These amounts tally \$480,918 per annum, which, literally fatal waste, might be stopped once for all by the establishment of an improved water-service, drawing its supply from unpolluted sources one hundred miles off, by the timely and wise investment of this sum for two or three years."

'Yellow-Fever, Panics, and Useless Quarantines, its Limitation by Temperature,' was the title of a paper by John H. Rauch, M.D., secretary of the State Board of Health of Illinois. 'The Canadian System of Maritime Sanitation,' by F. Montizambert, M.D., quarantine officer at Grosse Isle, St. Lawrence River, and 'The Quarantine System of Louisiana, and its Improvement,' by Lucien F. Salomon, M.D., secretary Board of Health State of Louisiana, formed the subjects of papers presented by their respective authors. One of the most valuable papers presented to the association was that entitled 'Garbage-Furnaces and the Destruction of Organic Matter by Fire,' by S. S. Kennington, M.D., president of the Minneapolis Board of Health. He described the Forrestal garbage-crematory in use in Milwaukee, the Ryder in Pittsburgh, the Mann in Montreal and Chicago, and the Engle in Minneapolis, Des Moines, and Coney Island. This latter style of furnace has just been completed at Milwaukee, and was put into operation for the first time during the session of the association. Health-Officer Clark of Buffalo described the garbage-crematory in use in that city, and said that its entire running expenses were defrayed by the lubricating oils extracted, alone; so that even if no market could be found at times, or at all, for the resultant fertilizers, they might at least be used as the furnace's fuel, and thus save coal.

One entire morning session was occupied in discussing the subject of yellow-fever, which was of unusual interest by reason of the epidemics in Jacksonville, Fla., and Decatur, Ala. The following papers were read: 'The History and Administration of Quarantine in Texas, 1887 to 1888,' by R. Rutherford, health-officer of Texas; 'The Outbreak of Yellow-Fever at Jackson, Miss., in September,

1888,' by Dr. Wirt Johnson, secretary Mississippi State Board of Health; 'The Problems of Yellow-Fever Epidemics,' by Dr. Jerome Cochran, State health-officer of Alabama; and 'Some Personal Observations on Yellow-Fever and its Habitudes as Opposed to the Fallacies and Dangers of Personal Quarantine,' by Dr. A. N. Bell, Brooklyn, N.Y.

The paper by Dr. Cochran was one of the best of the entire session, and was most enthusiastically received. Dr. Cochran had just come from Decatur, and his views were the result of years of experience with yellow-fever. It was a concise and pithy statement of his opinions, and any abstract that we could now give would be entirely inadequate. We shall hereafter give a full report of it.

The closing session of the association for scientific business was occupied by the reading of the following papers: 'Tuberculosis, its Origin, Detection, and Control,' by D. E. Salmon, D.V.M., chief of the Bureau of Animal Industry, Washington, D.C.; 'Some Observations on the Origin and Sources of Disease Germ,' by Theobald Smith, M.D., of the Bacteriological Laboratory of the Bureau of Animal Industry, Washington, D.C.; and 'Meteorological Observations as respects Disease Prevalence,' by Prof. W. W. Payne, director of the Observatory, Northfield, Minn.

The interest in many of the papers was greatly increased by illustrations thrown on the screen by lantern-projection.

Chairman C. A. Lindsley of the Lomb prize committee announced the award of the first prize, five hundred dollars, to the essay on hygienic dietetics superscribed with the motto 'Five Food Products illustrated by Practical Recipes.' On opening the sealed envelope, it was found that the successful author was Mary J. Hinman, wife of John J. Abel, now resident at Strasburg, Germany, where husband and wife are attending the university. Of the sixty-nine other essays, not one was deemed worthy of being awarded the second prize.

A resolution was unanimously adopted recommending the passage by Congress of an act to establish a national health bureau in the Department of the Interior.

The following officers were elected for the ensuing year: Dr. Hosmer A. Johnson, Chicago, president; Dr. Jerome Cochran of Alabama, first vice-president; and Dr. F. Montizambert of Canada, second vice-president. The secretary, Dr. Irving A. Watson of New Hampshire, and the treasurer, Dr. J. B. Lindsley of Tennessee, were re-elected. The association will hold its next annual meeting in Brooklyn, N.Y.

SURVEYS, THEIR KINDS AND PURPOSES.

MR. MARCUS BAKER read a paper on the above subject before the National Geological Society of Washington, Nov. 2, 1888. He classified surveys as follows:—

I. Surveys for general purposes, or information surveys: 1. Geodetic; 2. Geologic; 3. Topographic (ordinary and military); 4. Agricultural; 5. Magnetic; 6. Nautical (hydrographic and physical).

II. Surveys for jurisdictional purposes, or boundary surveys: 1. For defining boundaries of nations, states, counties, towns, etc.; 2. For defining property boundaries (cadastral, and partition of land for sale).

III. Surveys for construction purposes, or improvement surveys: 1. For constructing works, forts, arsenals, navy-yards, lighthouses, fishways, etc.; 2. For constructing routes of communication, roads, railroads, electric lines, pipe-lines, canals, etc.; 3. For reclamation of land, flood-plains, arid swamps, etc.; 4. For improvement of natural waterways; 5. For water-supply to centres of population; 6. For disposal of sewage from centres of population.

Surveys are of various kinds, are made for various purposes, and the results are exhibited in various ways. The kind of survey to be undertaken in any given case, the mode of conducting it and of exhibiting the results obtained, must depend primarily upon its purpose.

Numerous surveys are now in progress in the United States under the auspices of the general government, of individual States, of corporations, and of individuals. Large sums of money are annually expended upon them, and the outcome is of practical moment to many people.

It is conceived, therefore, that it will be of scientific value and of practical importance to take a general view of surveys, to enumerate and to classify them, and to set forth their purposes. It is of scientific value, because the bringing-together of a considerable number of related facts or phenomena under one general view gives rise to comparison, to study, and to deduction of general principles; and it is of practical importance, because the purpose for which any work is undertaken should be clearly formulated, that the work may be so done as to well and economically serve its purpose.

Surveys must be of various kinds, because they are made to serve various purposes. A classification of kinds is, then, a classification by purposes. The tentative schedule here suggested is one of the various possible modes of classification. Whether better or worse than other schemes of classification, is not important for the present purpose. It may serve for enumeration, and afford the basis for some study of the different kinds of surveys as determined by their purposes.

Now, the purpose of all surveys is twofold: viz., first, to acquire certain information relating to the earth; and, second, to spread this information among the people for whom it is acquired. To disseminate the information obtained among those for whom it has been obtained, the results are set forth (*a*) in the manuscript or printed page, accompanied by illustrations, diagrams, profiles, sketches, photographs, etc., and (*b*) in maps. The results of certain surveys are almost completely exhibited without the aid of maps, while in others the entire result of the survey is a map. Between these extremes we have surveys whose results require joint use of text and map in varying proportions.

In a geodetic survey the results are set forth in the printed text, in tables, and in diagram or sketch of the triangulation. In a topographic survey the result is a topographic map, and, if the survey be purely topographic, the map is the only result. These two kinds of survey, therefore, stand at the two extremes in manner of exhibiting results. In a purely topographic survey all the results are exhibited on the map; in the geodetic survey all the results are exhibited in the printed text and tables.

Surveys may be conveniently grouped into three great divisions: viz., I. Those made for general purposes, or information surveys; II. Those made for jurisdictional purposes, or boundary surveys; III. Those made for construction purposes, or improvement surveys. And these again may be usefully subdivided into several smaller groups, as set forth in the above schedule.

The well-being and prosperity of a community is intimately related to and dependent upon the resources of the region in which it lives. Recognizing this fact, civilized communities study their surroundings and resources, in order, that, by a better knowledge of and mastery over them, they may improve their condition.

The general study of the earth, its size and shape, its structure, its surface form, its surface quality, its forces, is the object and purpose of information surveys. The organization of such surveys is a matter of comparatively modern times, and an accompaniment only of the highest civilization.

When civilized man reaches that stage of development in which he recognizes that his advantage over the semi-civilized or barbarous was due to his better acquaintance with, and mastery over, nature, then was he stimulated to further study and research. Research by single individuals, in private laboratories, led to discoveries of interesting and useful facts and principles. It led, further, to the suggestion of principles of wide application, but which could only be tested by the study of many and widely separated localities. Such study being often beyond the power of the individual, and its outcome being of interest to the entire community in its organized capacity to test, the State took it up, and organized expeditions to travel in distant parts, and collect information for the benefit of the whole community. Such expeditions brought back information respecting distant parts, that served to throw light upon little-understood phenomena at home; to establish principles of higher value than the individual facts from which they had been derived; and led to the establishment of some, and rejection of other, generalizations, based upon a knowledge of only a limited area. The interesting, instructive, and useful facts brought to light by such systematic exploration and general survey showed the